USER MANUAL

X7721r/7721r+

Ethernet Broadband ADSL Router

VERSION 1.1

Copyright©2003 XAVi Technologies Corp.
All rights reserved.

XAVi Technologies Corporation
Tel: +886-2-2995-7953
9F, No. 129, Hsing Te Road, Sanchung City,
Taipei Hsien 241,
Taiwan

Copyright © 2003, XAVi Technologies Corporation

Information in this manual is subject to change without notice. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying or scanning, for any purpose, without the written permission of XAVi Technologies Corporation.

XAVi Technologies Corporation provides this documentation without warranty of any kind, implied or expressed, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Table of Contents

Chapter 1 – Getting Started

I. Overview…… 6
II. Features…… 7
III. Packaging…… 8
IV. Safety Guidelines…… 9
V. Appearance……10
Front Panel……10
Rear Panel…… 11
VI. Hardware Installation…… 12
VII. Management…… 13
VIII. Default Values…… 14
IX. Software Upgrade…… 15

Chapter 2 – Command Line Interface

I. Console Setup…… 17
II. CLI Commands…… 18
1. Main Menu Commands…… 18
2. LAN Menu Commands…… 21

Chapter 3 – Web Management Interface

I. Overview……22
II. Preparation……22
1. Login……23
2. Connection Settings……24
2.1 RFC 1483 Bridge…… 25
2.1.1 RFC 1483 Bridge with NAT…… 27
2.2 RFC 1483 Route……29
2.3 PPP over ATM (PPPoA)…… 31
2.4 PPP over Ethernet (PPPoE)…… 33
2.5 IP over ATM (IPoA)…… 35
3. Advanced Settings…… 37
3.1 NAPT (Network Address Port Translation)…… 37
3.2 Static Routes…… 38
3.3 DNS Relay……40
3.4 Security…… 41
3.4.1 Security state……41
3.4.2 Security level……42
3.4.3 Security interfaces……43

Table of Contents

3.4.4 Policies, Triggers, Intrusion Detection..……44
3.4.4.1 Security Policy Configuration……45
3.4.4.2 Security Triggers……49
3.4.4.3 Intrusion Detection……50
3.4.4.4 Default Security Policies……51
4. System Settings……52
4.1 Local LAN IP……52
4.2 DHCP Server…… 53
4.3 Management……54
4.3.1 Edit User Details……54
4.3.2 Add Users……55
4.3.3 Delete Users……56
4.4 Ethernet……57
5. Modem Status……58
6. Maintenance……60
6.1 Error Log……60
6.2 Modem Upgrade……61
6.3 Backup/Restore…… 61
6.4 Restart……62
6.5 Save……62

Appendix A – Specifications

A1. Hardware Specifications..……63
A2. Software Specifications……64

Appendix B – Warranties

B1. Product Warranty…….…….. 65
B2. Warranty Repair……66
B3. Out-of-Warranty Repair……66

Appendix C – Regulations

C1. FCC Part 15 Notice……67
C2. IC CS-03 Notice……68
C3. UL Safety Regulations..……69

Contact Information……70

Revision Marks

Revision	Date	Notes
V 1.0	December 12, 2003	Software Version: 1.02XAT0.7721A

Chapter 1

Getting Started

I. Overview

The ***X7721r/X7721r+*** is a multi-mode ADSL/ADSL2 router, which complies with ANSI T1.413 Issue 2, ITU G.992.1 (X7721r/X7721r+), ITU G.992.2, G.992.3, G.992.4, G.992.5 (X7721r+ only), Annex A, and ETSI ITS 101388 ADSL standards. The ***X7001r+*** supports ADSL2+ as well. The ***X7001r/X7721r+*** provides high-speed Internet access via one WAN port over ATM over ADSL, and also connects to the corporate network via a 10/100BaseT Ethernet port. It supports multiple protocols such as PPP (RFC 2364), IP (RFC 2225/RFC 1577), and RFC 1483 over ATM over ADSL, and PPP (RFC 2516) over Ethernet. ***X7001r/X7001r+*** offers convenient configuration and management locally by telnet, SNMP, and a web-browser through the Ethernet interface, and remotely through the ADSL interface.

II. Features

- ✓ High Speed Asymmetrical Data Transmission on Twisted Copper Pair Wire
- ✓ Service providers can deploy ADSL rapidly over existing wire infrastructure (POTS or ISDN line)
- ✓ Interchangeable between Bridge and Router mode
- ✓ RFC 1483 Bridge and Routing over ATM over ADSL
- ✓ PPPoE, and IPoA, and PPPoA Routing over ADSL
- ✓ 10/100BaseT Ethernet Port for PC/LAN connection
- ✓ High quality, simple operation, and low power consumption
- ✓ Compatible and interoperable with most central office side ADSL DSLAM or Multi-service Access Systems
- ✓ Local OAM&P through command line interface via RS-232 craft port
- ✓ Configuration and management with Telnet through the Ethernet interface, and remote Telnet through ADSL interface
- ✓ Firmware upgradeable through TFTP, HTTP
- ✓ Interoperability complies with TR-48

III. Packaging

This package consists of the following items:

X7721r/X7721r+ ADSL device unit

RJ-45 Cable

RJ-11 Cable

AC Adapter

User's Manual CD

IV. Safety Guidelines

In order to reduce the risk of fire, electric shock and injury, please adhere to the following safety guidelines.

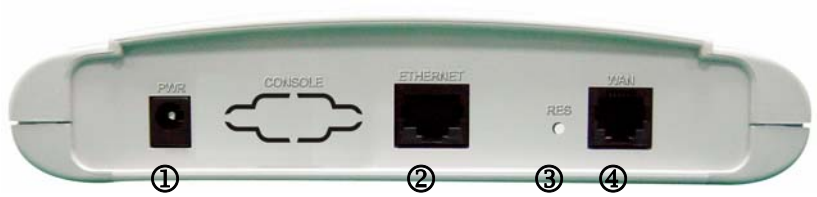
- ✓ Carefully follow the instructions in this manual; also follow all instruction labels on this device.
- ✓ Except for the power adapter supplied, this device should not be connected to any other adapters.
- ✓ Do not spill liquid of any kind on this device.
- ✓ Do not place the unit on an unstable stand or table. This unit may drop and become damaged.
- ✓ Do not expose this unit to direct sunlight.
- ✓ Do not place any hot devices close to this unit, as they may degrade or cause damage to the unit.
- ✓ Do not place any heavy objects on top of this unit.
- ✓ Do not use liquid cleaners or aerosol cleaners. Use a soft dry cloth for cleaning.

V. Appearance

Front Panel

	Label	LED Status	Color	Description
①	100M	ON	Green	100M Ethernet transmitting.
②	10M	ON	Green	10M Ethernet transmitting.
③	PWR	ON	Green	Power supply is connected.
④	WAN	Blinking	Green	Training with DSLAM.
		ON	Green	ADSL link is ready.
⑤	ALM	Blinking	RED	Booting up.
		ON	RED	Error.

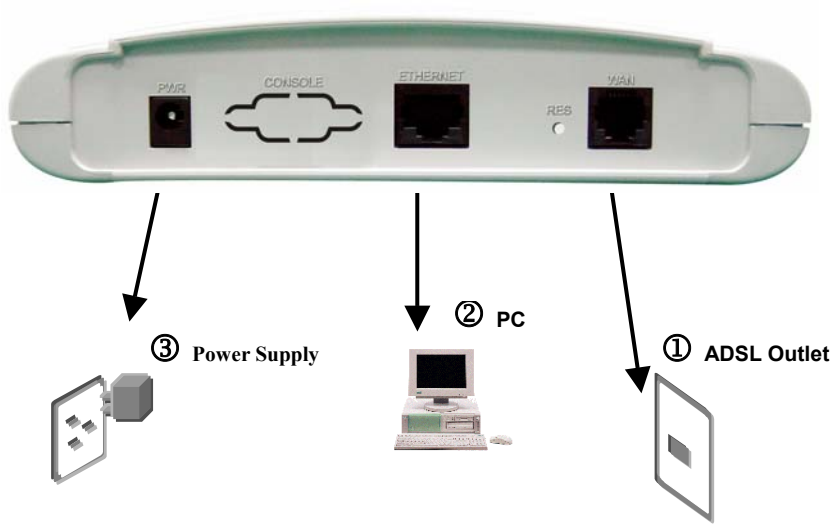
Rear Panel



	Label	Description
①	PWR	Power jack; connect to a power adapter.
②	ETHERNET	RJ-45 port; connect to a PC or LAN.
③	RESET	Reset the modem back to factory settings by holding down on this button.
④	WAN	RJ-11 port; connect to the ADSL outlet.

VI. Hardware Installation

1. **Connect one end of the ADSL cable to the WAN port of *X7721r/X7721r+* and the other end to the ADSL wall outlet.**
2. **Use a RJ-45 cable to connect one end to the Ethernet port of *X7721r/X7721r+* and the other end to the LAN or a PC with an Ethernet adapter installed.**
3. **Plug in the AC adapter to the AC power socket, and then connect the DC jack to the PWR inlet of *X7721r/X7721r+*.**



Note: Be sure to use a RJ-45 crossover cable while connecting to a hub.

VII. Management

- ✓ **Console Port** – use the RS-232 cable for connecting ***X7721r/X7721r+*** to a console terminal or a PC running a terminal emulation program, such as Hyper Terminal. *(For further details, See Chapter 2: Command Line Interface)*
- ✓ **Local Ethernet Port (telnet)** – connect the Ethernet port to your local area network or directly to a PC, "Telnet" ***X7721r/X7721r+*** from any workstation in the LAN. The default local Ethernet IP address is "192.168.1.1".
- ✓ **Local Ethernet Port (web-browser)** – connect the Ethernet port to your local area network or directly to a PC. Launch your web browser and enter default local Ethernet IP address "192.168.1.1" into the address bar.
- ✓ **ADSL Port from Remote Site** – while the ADSL connection is in service, you may remotely "Telnet" ***X7721r/X7721r+*** from a workstation connected to the CO equipment.

Note: As operating an ADSL device requires technical know-how and experience, it is recommended that only qualified technical staff manage ***X7721r/X7721r+***. Therefore, a password authentication is required when you enter the command line and Web interface. See the *Default Values* section to obtain the password.

VIII. Default Values

X7721r/X7721r+ is pre-configured with the following parameters; you may also re-load the default parameters by typing **Restore** in the command line interface or using the **Restart** link in the Web interface.

Default Mode: Bridge	**Username/Password: admin**
Bridge Mode Setting	**WAN and ADSL**
Ethernet (local) IP: 192.168.1.1	Local Line Code: Multi-mode
Subnet Mask: 255.255.255.0	Trellis Mode: Enable
Full Duplex: Auto	FDM Mode: Fdm
Protocol: RFC1483, Bridge Mode	Coding Gain: Multi
VPI/VCI: 8/35	Transmit Power Attenuation: 0dB
Class (QoS): UBR	
Spanning Tree: Disable	
Packet Filter: Any	
Router Mode Setting	**DHCP Server:** Disable
Ethernet (local) IP: 192.168.1.1	**DNS Relay:** Disable
Subnet Mask: 255.255.255.0	
Full Duplex: Auto	

Note: The Username and Password are case-sensitive.

IX. Software Upgrade

You may easily upgrade ***X7721r/X7721r+*** embedded software by obtaining the compressed upgrade kit from the service provider and then following the steps for upgrading through either a DOS prompt or a Web-browser:

Software upgrade through a DOS prompt

Step 1. Extract the ZIP file for updated firmware.

Step 2. Connect ***X7721r/X7721r+*** via the local Ethernet port or remote ADSL link, making sure that the ***X7721r/X7721r+*** Ethernet IP address and your terminal are properly configured so that you can successfully "*ping*" ***X7721r/X7721r+***. The default local IP address is "192.168.1.1".

Step 3. Under the DOS prompt, execute the command "xupgrade <*IP address of* ***X7721r/X7721r+*** >", for instance, "xupgrade 192.168.1.1".

Step 4. This upgrading process may last as long as 60 seconds.

Step 5. Reboot ***X7721r/X7721r+*** with new software.

Note: Strictly maintain stable power to ***X7721r/X7721r+*** while upgrading its software. If the power fails during the upgrading process, contents in the memory could be destroyed, and the system may hang. In such a case, you must call the dealer or system integrator for repairs.

Software upgrade through a Web-browser

Step 1. Extract the ZIP file for updated firmware.

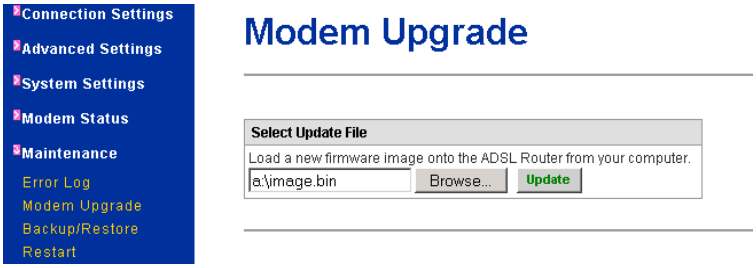
Step 2. Connect ***X7721r/X7721r+*** via the local Ethernet port or remote ADSL link, making sure that the ***X7721r/X7721r+*** Ethernet IP address and your terminal are properly configured so that you can successfully "*ping*" ***X7721r/X7721r+***. The default local IP address is "192.168.1.1".

Step 3. Launch the Web browser (IE or Netscape), and enter the default IP address 192.168.1.1 into the address bar to access the Web management page.

Step 4. Click on the **Maintenance** link in the navigation bar and then on the **Modem Upgrade** link below it.

Step 5. Click on the **Browse** button to select the upgrade file.

Step 6. Click on the **Update** button when completed.



Note: Strictly maintain stable power to ***X7721r/X7721r+*** while upgrading its software. If the power fails during the upgrading process, contents in the memory could be destroyed, and the system may hang. In such a case, you must call the dealer or system integrator for repairs.

Chapter 2

Command Line Interface

I. Console Setup

Connect the RS-232 console port to an ASCII data terminal or a PC with Windows serial Terminal mode of VT-100 (Hyper Terminal). To Start the Hyper-terminal, follow the steps below.

1. **Start "Hyper-terminal" program**

   On Windows 98 or Windows NT:

   Click on the **Start** button → **Programs** → **Accessories** → **Hyper Terminal Group** → Double Click **"Hypertrm.exe"** → Enter a Connection Name → Select Icon → Click **OK**

2. **Select a COM port to communicate with *X7721r/X7721r+***

   Choose **Direct to COM1** or **Direct to COM2** and click on **OK**

3. **Set Port Properties**

   Port Setting:
   Bit per second: 9600
   Data bits: 8
   Parity bits: None
   Stop bits: 1
   Flow Control: None

   Settings:
   Function, arrow, and ctrl keys act as: Windows keys
   Emulation: Auto-detect
   Back-scroll buffer lines: 500

   ASCII Setup:
   Echo typed characters locally: enable
   Line delay: 0 milliseconds
   Character line feeds incoming line ends: enable

III. CLI Commands

1. Main Menu Commands

Type "?" following the "→" to retrieve a list of commands under the main menu to begin the configuration.

Command	Syntax	Description / Parameters
Display	→ display	Displays the configuration of IP
Lan	→ lan	Enters the LAN menu *(See LAN Menu commands for more details)*
Restart	→ restart	Reboots the modem
Restore	→ restore	Sets all configurations to default
Ping	→ ping <ipAddress>	Pings the specified IP address for testing purposes
Save	→ save	Saves the current configuration

DISPLAY

- Displays the IP address, subnet mask and software version.
- *Syntax*: display

```
→ display
Version : 1.02XAT0.7721A (1.02XAT0.7721A 09/Dec/2003 16:50)

IP Interface: iplan
                                        Ipaddr : 192.168.1.1
                                        Mask : 255.255.255.0
→
```

LAN

- Enters the lan menu
- *Syntax*: lan

```
→ lan

lan>
```

RESTART

- Restarts the modem.
- *Syntax*: restart

```
→ restart
NBfs1Z
PP Boot 9.0.3.19 (28 July 2003)
Copyright (c) 2003 GlobespanVirata, Inc.
SDRAM size = 0x1000000
NP

i   0%
i   4%
i   8%
i  13%
i  17%
i  22%
i  27%
i  31%
i  36%
i  41%
i  46%
i  51%
i  57%
i  62%
i  66%
i  71%
i  76%
i  83%
i  90%
i 100%

Login:
```

RESTORE

- Sets all configurations to factory default settings.
- *Syntax*: restore

```
→ restore
Restoring factory defaults...

→
```

PING

- Pings a specified IP address.
- *Syntax*: ping <ipAddress>
- *Example*: ping 192.168.0.81

```
→ ping 192.168.1.1
ping: PING 192.168.1.1: 32 data bytes
ping: 40 bytes from 192.168.1.1: seq=0, ttl=128, rtt<10ms192.168.0.81

→
```

SAVE

- Saves the current configuration.
- *Syntax*: save

```
→ save
Wait for 'configuration saved' message...
Saving configuration...
Configuration saved.
→
```

2. LAN Menu Commands

Type "lan" following the "→" to enter the LAN menu.

Command	Syntax	Description / Parameters
▸ setip	lan→ setip <ipAddresss> [<subnet mask>]	Configures IP settings

SETIP

- Configures the IP address and subnet mask of ***X7721r/X7721r+***.
- *Syntax*: setip <ipaddress>[<subnet mask>]
- *Example*: setip 192.168.1.10 255.255.255.0

```
lan> setip 192.168.1.10 255.255.255.0

lan>
```

Chapter 3

Web Management Interface

I. Overview

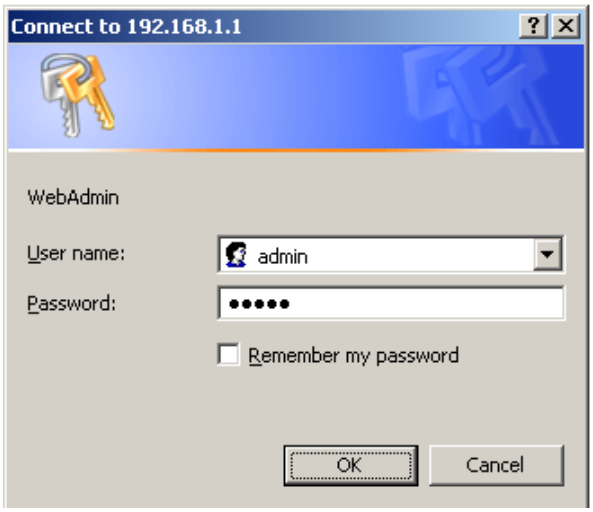
The Web Management Interface is provided in order to configure ***X7721r/X7721r+*** as easily as possible. It provides a user-friendly graphical interface through a Web platform. You may configure bridge or router functions to accommodate your device needs. In the section below, each configuration item is described in detail.

II. Preparation

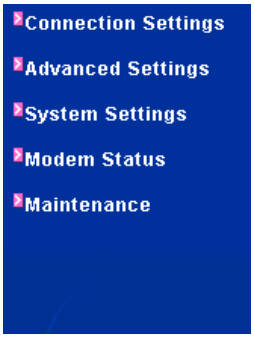
1. Please refer to the hardware installation procedure in Chapter 1 to install ***X7721r/X7721r+***.
2. You should configure your PC to the same IP subnet as the ***X7721r/X7721r+***.
   Example: ***X7721r/X7721r+***: 192.168.**1.1**
   Your PC: 192.168.**1.x**
3. Connect your PC to ***X7721r/X7721r+*** and make sure that the PING function is working properly. The default IP address of this device is 192.168.1.1
4. Launch the Web browser (IE or Netscape), and enter the default IP address 192.168.1.1 into the address bar to access the Web management page.
5. The **Login** dialog box will appear first.

1. Login

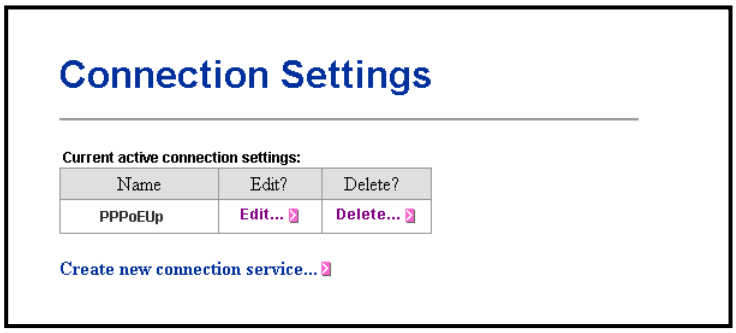
- The **Enter Network password** window will pop up when starting the configuration. With the window active, type **admin** for both **User name** and **Password**, and then click on the **OK** button. You can also edit the username and password or add a new profile *(see section 4.3 Management for further details).*



2. Connection Settings



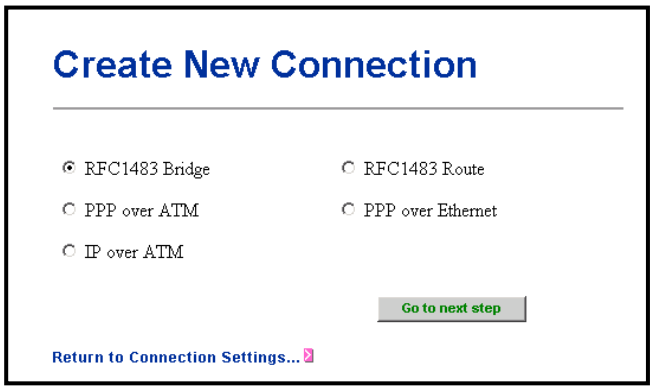
- Click on the **Connection Settings** link on the navigation bar.
- This page lists the WAN connection protocols that are available on this device. Please read the following instructions for creating each type of WAN connection.



- You can create multiple WAN connections for each of following protocols:
  - 2.1 RFC 1483 Bridge
    - 2.1.1 RFC 1483 Bridge with NAT
  - 2.2 RFC 1483 Route
  - 2.3 PPP over ATM (PPPoA)
  - 2.4 PPP over Ethernet (PPPoE)
  - 2.5 IP over ATM (IPoA)

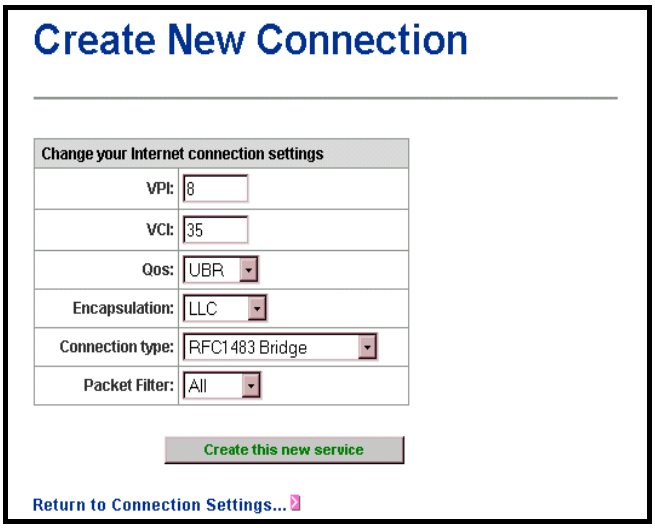
2.1 RFC 1483 Bridge

- Click on the **Create new connection service** link to display the types of service available.



- Select **RFC1483 Bridge** and then click on the **Go to next step** button.

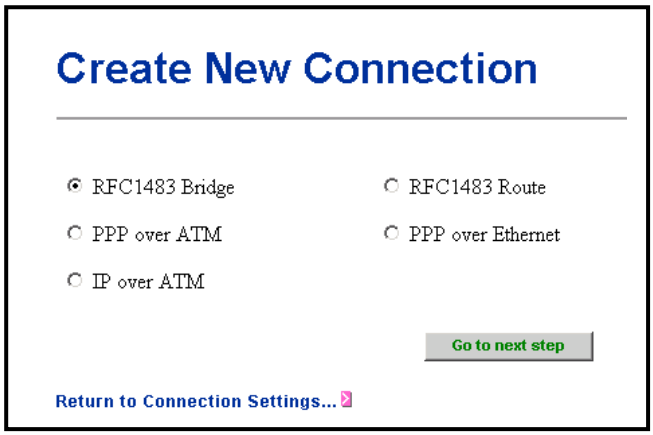
You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu
- **Encapsulation:** Select LLC or VC-Mux from the menu.
- **Connection type:** Select RFC1483 Bridge.
- **Packet Filter:** Select the packet filter type from the menu.
- Click on the **Create this new service** button to complete the configuration.

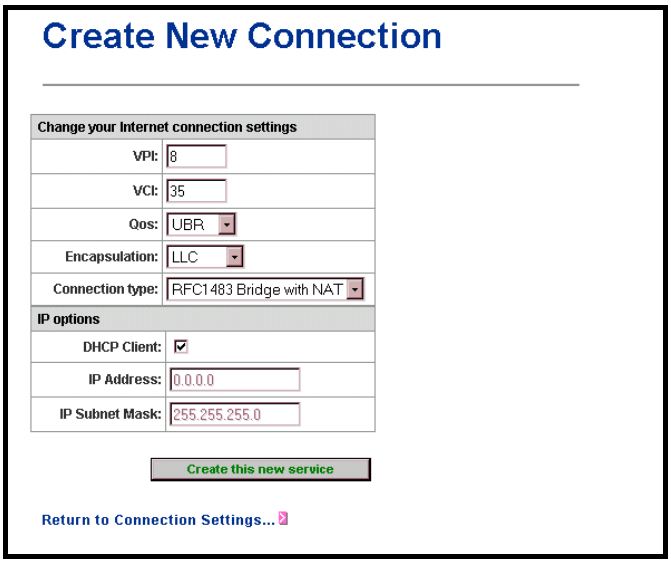
2.1.1 RFC 1483 Bridge with NAT

- Click on the **Create new connection service** link to display the types of service available.



- Select **RFC 1483 Bridge** and then click on the **Go to next step** button.

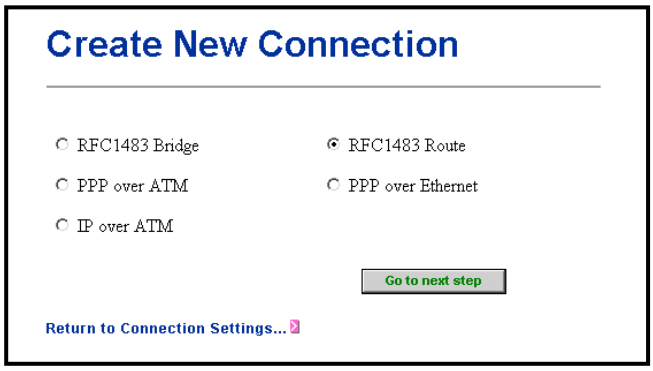
You will then see the following screen. Be sure to select **RFC1483 Bridge with NAT** for **Connection type.**



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu
- **Encapsulation:** Select LLC or VC-Mux from the menu.
- **Connection type:** Select RFC1483 Bridge with NAT.
- **DHCP Client:** Check this box if you would like the device to receive its IP address from a DHCP server (if you select this option, you do not need to enter an IP address or subnet mask).
- **IP Address:** Enter the IP address of the device (if not using the device as a DHCP client).
- **IP Subnet Mask:** Enter the subnet mask of the IP address (if not using the device as a DHCP client).
- Click on the **Create this new service** button to complete the configuration.

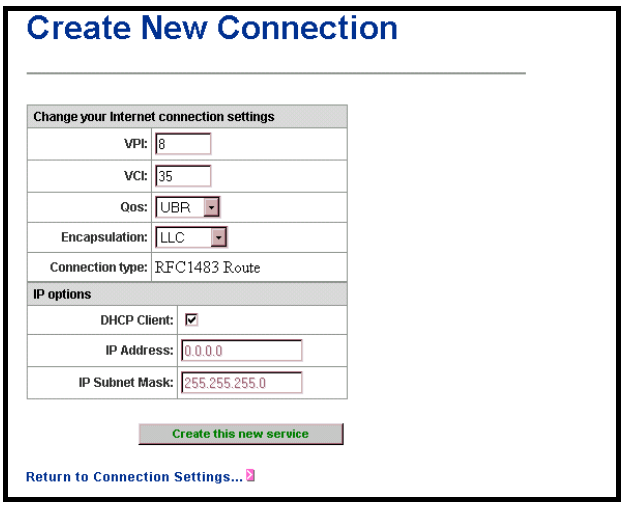
2.2 RFC 1483 Route

- Click on the **Create new connection service** link to display the types of service available.



Select **RFC 1483 Route** and then click on the **Go to next step** button.

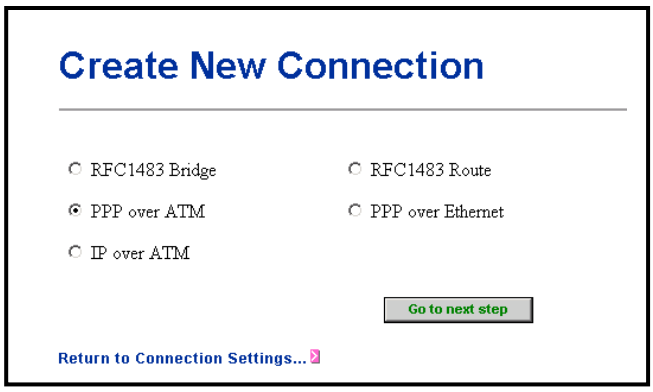
You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu.
- **Encapsulation:** Select LLC or VC-Mux from the menu.
- **DHCP Client:** Check this box if you would like the device to receive its IP address from a DHCP server (if you select this option, you do not need to enter an IP address or subnet mask).
- **IP Address:** Enter the IP address of the device (if not using the device as a DHCP client).
- **IP Subnet Mask:** Enter the subnet mask of the IP address (if not using the device as a DHCP client).
- Click on the **Create this new service** button to complete the configuration.

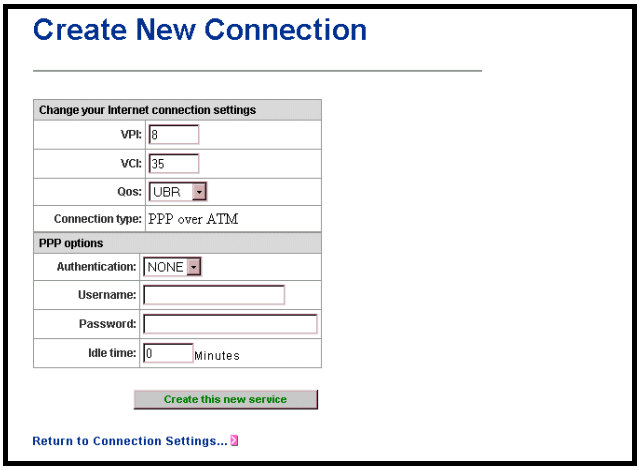
2.3 PPP over ATM (PPPoA)

- Click on the **Create new connection service** link to display the types of service available.



Select **PPP over ATM** and then click on the **Go to next step** button.

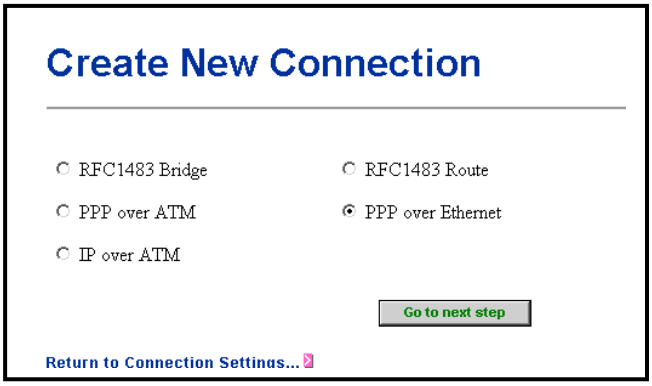
You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu.
- **Authentication:** Select PAP or CHAP.
- **Username:** Enter the user name for this connection (from ISP).
- **Password:** Enter the password for this connection (from ISP).
- **Idle time:** Enter a number for the idle time in seconds. This will end the call if the connection is idle for the specified time (0 indicates that the call will not be ended).
- Click on the **Create this new service** button to complete the configuration.

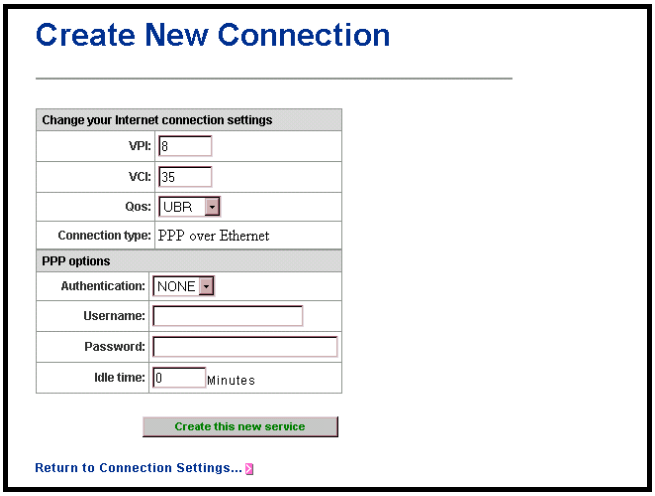
2.4 PPP over Ethernet (PPPoE)

- Click on the **Create new connection service** link to display the types of service available.



- Select **PPP over Ethernet** and then click on the **Go to next step** button.

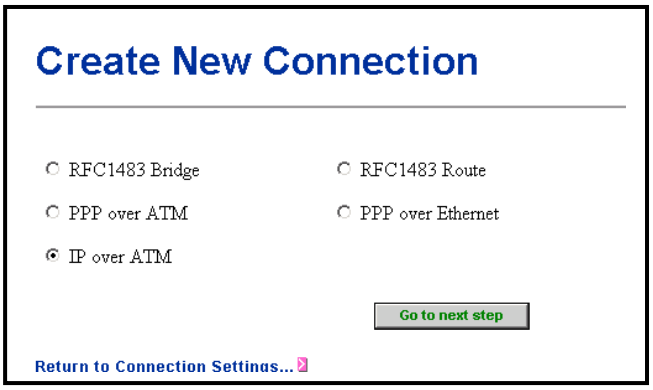
You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu.
- **Authentication:** Select PAP or CHAP.
- **Username:** Enter the user name for this connection (from ISP).
- **Password:** Enter the password for this connection (from ISP).
- **Idle time:** Enter a number for the idle time in seconds. This will end the call if the connection is idle for the specified time (0 indicates that the call will not be ended).
- Click on the **Create this new service** button to complete the configuration.

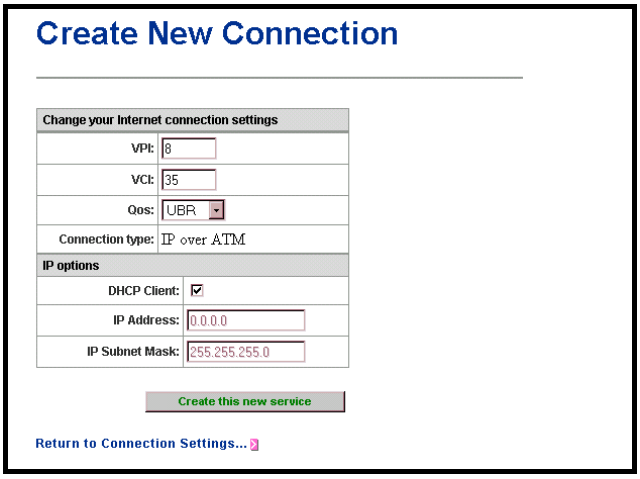
2.5 IP over ATM (IpoA)

- Click on the **Create new connection service** link to display the types of service available.



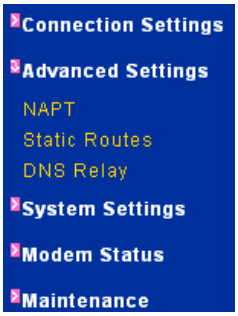
- Select **IP over ATM** and then click on the **Go to next step** button.

You will then see the following screen:



- **VPI:** Enter the VPI value into this box.
- **VCI:** Enter the VCI value into this box.
- **Qos:** Select the quality of service level from the menu.
- **DHCP Client:** Check this box if you would like the device to receive its IP address from a DHCP server (if you select this option, you do not need to enter an IP address or subnet mask).
- **IP Address:** Enter the IP address of the device (if not using the device as a DHCP client).
- **IP Subnet Mask:** Enter the subnet mask of the IP address (if not using the device as a DHCP client).
- Click on the **Create this new service** button to complete the configuration.

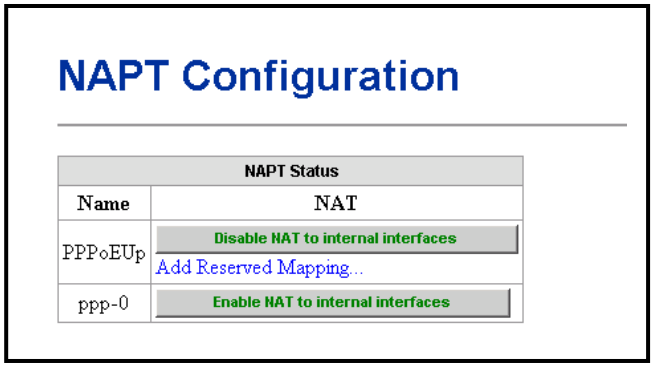
3. Advanced Settings



- Click on the **Advanced Settings** link on the navigation bar.
- This section includes **NAPT (Network Address Port Translation)**, **Static Routes**, and **DNS Relay**. Each section is described in detail below.

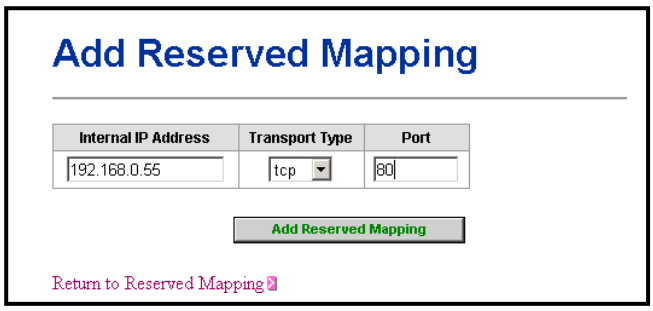
3.1 NAPT (Network Address Port Translation)

- Click on the **NAPT** link in the navigation bar to view the NAPT configuration page. This page displays the NAT status of the available connections.



- To enable NAT on an interface, click on the **Enable NAT to internal interfaces** button.
- To disable NAT on an interface, click on the **Disable NAT to internal interfaces** button.

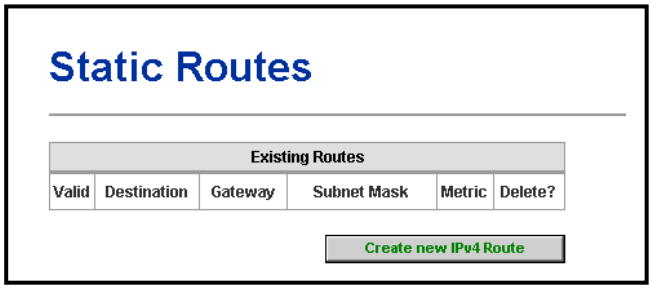
- You may map a port to an interface by clicking on the **Add Reserved Mapping** link under the **Disable NAT to internal interfaces** button. You will then see the following screen:



- **Internal IP Address:** Enter the IP address to which you would like to map a protocol and port.
- **Transport Type:** select a protocol from the drop-down list.
- **Port:** Enter the port number of that protocol.
- Click on the **Add Reserved Mapping** button when completed.

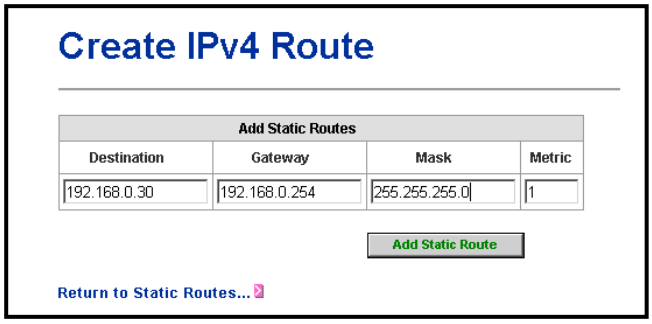
3.2 Static Routes

- Click on the **Static Routes** link in the navigation bar to view the IP Routing table.



- Click on the **Create new IP4 Route** button to add a new route.

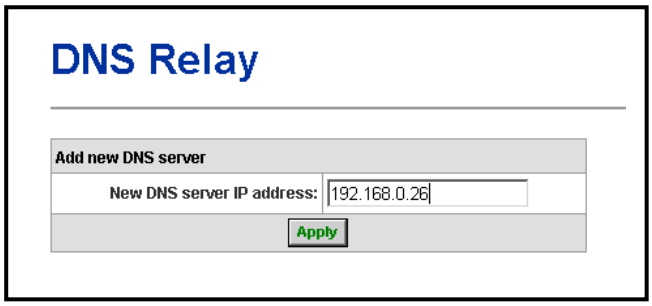
You will then see the following screen:



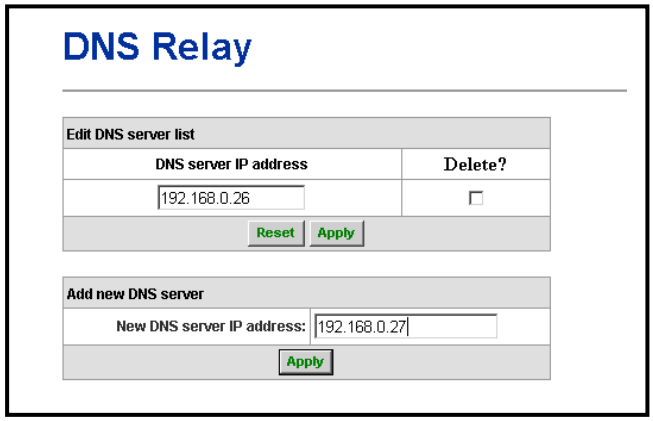
- **Destination:** Enter the IP Address of the destination router.
- **Gateway:** Enter the IP Address of the gateway.
- **Mask:** Enter the subnet mask of the IP address.
- **Metric:** Enter the number of hops required to reach the destination.
- Click on the **Add Static Route** button when completed.

3.3 DNS Relay

- Click on the **DNS Relay** link in the navigation bar to view the DNS Relay table.
- Enter the Primary DNS address into the text box and then click on the **Apply** button.

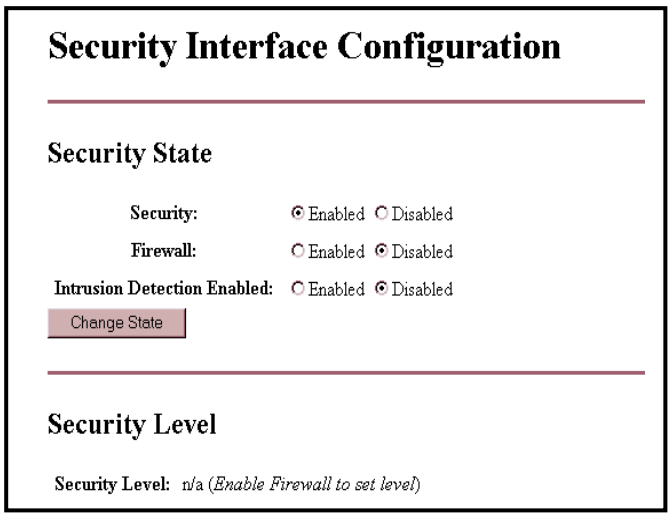


- On the next screen, you may add a Secondary DNS address into the text box. Click on the **Apply** button to continue.
- To delete a DNS address, check the **Delete?** box, and click on the **Apply** button.



3.4 Security

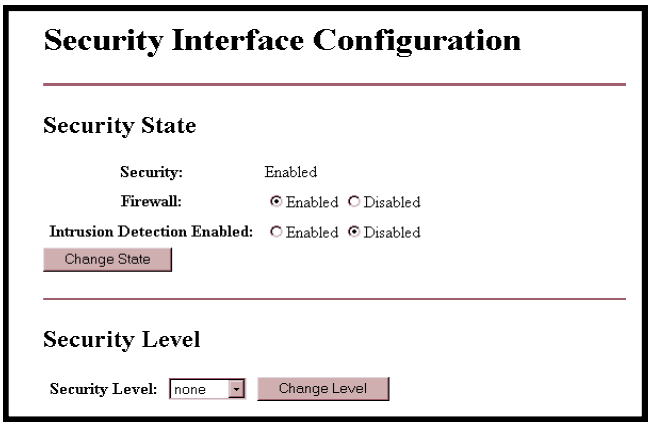
Click on the **Security** link in the navigation bar to view or change the security interface settings.



3.4.1 Security State

- Use the toggle switch to enable or disable **Security, Firewall,** and **Intrusion Detection.**
- Click on the **Change State** button to apply the new settings.
- Configurations for advanced security settings will apply only if **Security** is enabled in the **Security State** section.
- Configurations for security policies and intrusion detection will apply only if **Firewall** is enabled in the **Security State** section.
- Configurations for intrusion detection will apply only if **Intrusion Detection** is enabled in the **Security State** section.

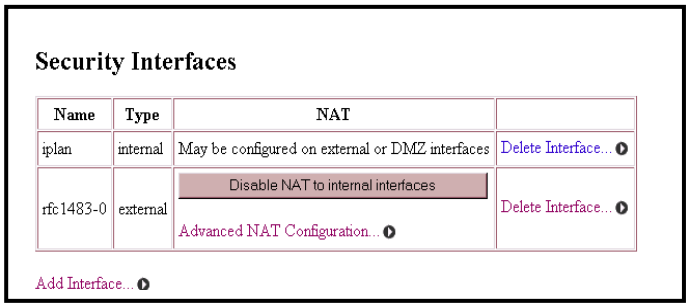
3.4.2 Security Level



- You must set **Firewall** to **Enabled** in order to choose a security level.
- Choose a value for **Security Level** from the drop-down menu.
- Click on the **Change State** button to apply the new settings.

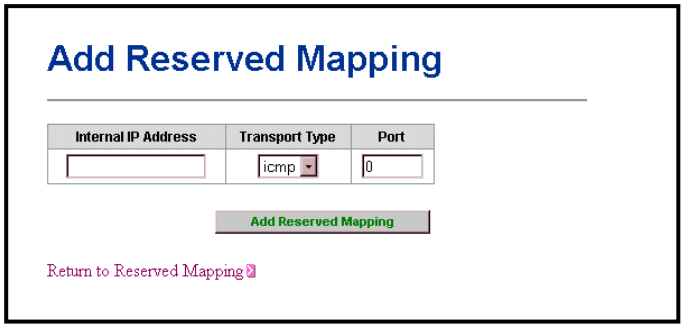
3.4.3 Security Interfaces

This table lists the name, type, and NAT status of each security interface.



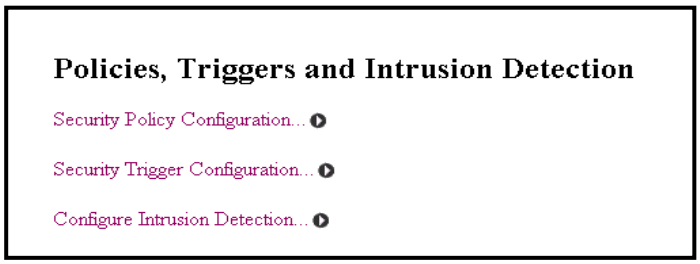
- To enable NAT on an interface, click on the **Enable NAT to internal interfaces** button.
- To disable NAT on an interface, click on the **Disable NAT to internal interfaces** button.
- To map a port to an interface, click on the **Advanced NAT Configuration** link under the **Disable NAT to internal interfaces** button. Choose the **Add Reserved Mapping** link on the next screen. See the **Add Reserved Mapping** section (next page) for instructions.
- To delete an interface, click on the **Delete Interface** link in the corresponding row.
- To add another interface, click on the **Add Interface** link below the table.

Add Reserved Mapping



- **Internal IP Address:** Enter the IP address to which you would like to map a protocol and port.
- **Transport Type:** select a protocol from the drop down list.
- **Port:** Enter a port number for the selected protocol.
- Click on the **Add Reserved Mapping** button when completed.

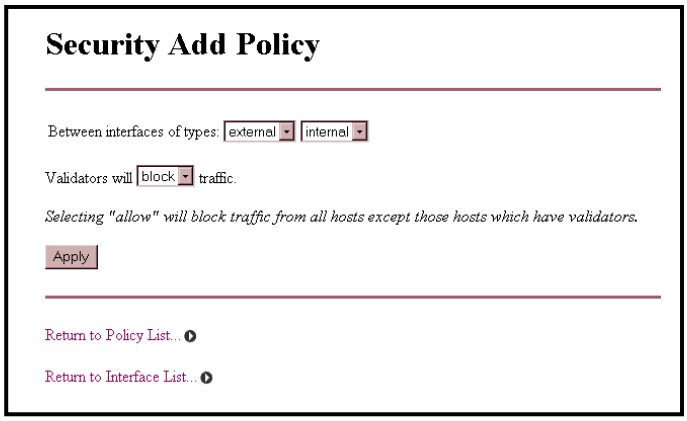
3.4.4 Policies, Triggers, and Intrusion detection



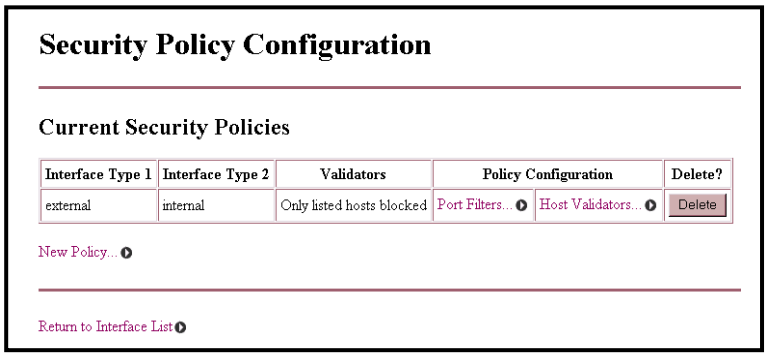
- To configure security policies, security triggers, or intrusion detection, choose the corresponding link.

3.4.4.1 Security Policy Configuration

- To add a new security policy, choose the **Security Policy Configuration** link, and then choose the **New Policy** link on the next screen. You will then see the following screen:


Security Add Policy
Between interfaces of types: external internal
Validators will block traffic.
Selecting "allow" will block traffic from all hosts except those hosts which have validators.
Apply
Return to Policy List...
Return to Interface List...

- Choose the types of interfaces from the menus between which you would like to configure the security policy.
- Choose whether the validators (selection criteria) will serve to block or allow traffic.
- Click on the **Apply** button. You will then see the following screen:

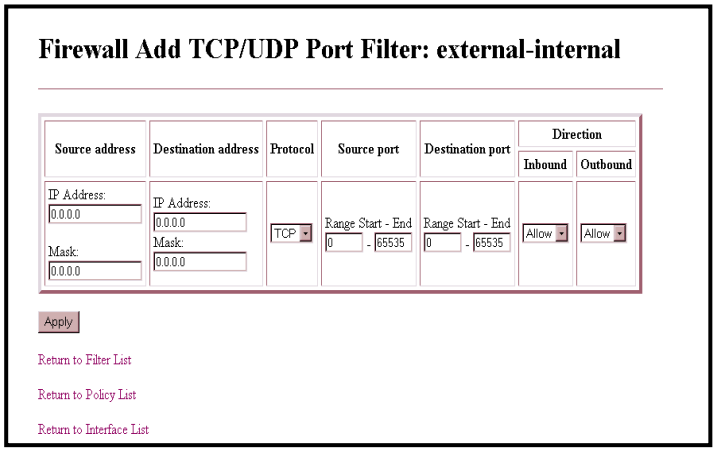


- To configure a new policy, click on the **Port Filters** link and/or the **Host Validators** link in the Current Security Policies table.
- To delete a security policy, click on the **Delete** button in the corresponding row of the Current Security Policies table.

Port Filters

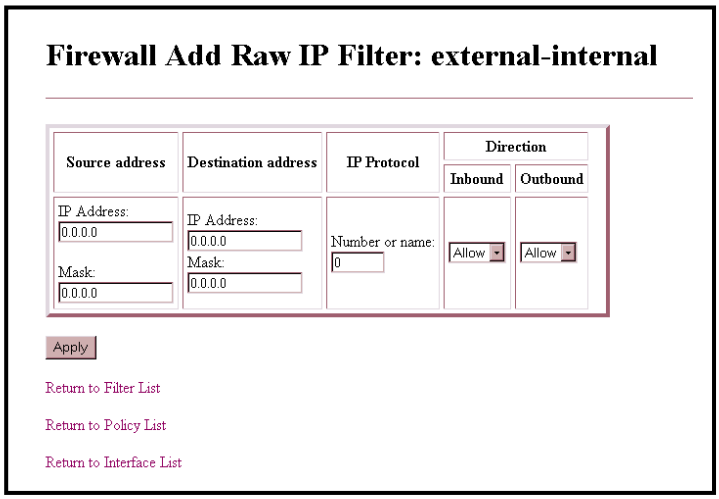
- To set the port filters, click on the **Port Filters** link in the Current Security Policies table. On the next screen, choose **Add TCP or UDP Filter** or **Add Raw IP Filter** link depending on the type of filter you want to create.

Add TCP or UDP Filter



- Enter the criteria for the port filter into the table.
- Ensure that the Protocol is appropriate for your interface.
- Port filter default values for "allow" criteria will allow all traffic to pass (as shown in this example).
- Port filter default values for "block" criteria will block all traffic.
- Filter criteria for source and destination ports define the range within which traffic will be allowed/blocked by the filter.
- Filter criteria for source and destination addresses and subnet masks do not override port criteria, but add additional criteria for the port filter.
- Click on the **Apply** button to return to the list of defined port filters.
- To delete a port filter, click on the **Delete** button of the corresponding row of the port filters table.

Add Raw IP filter

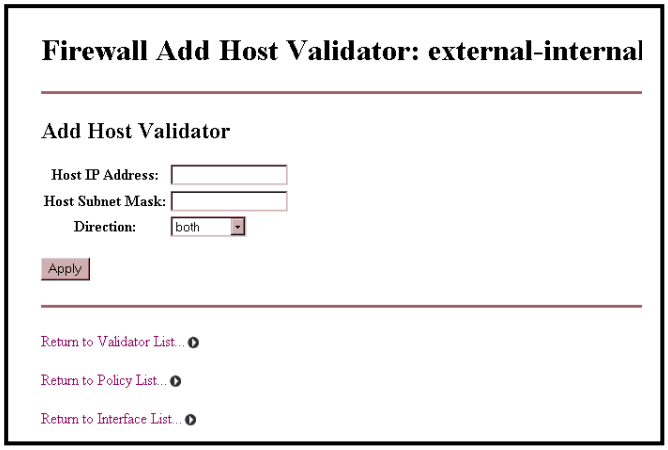


- Enter the criteria for the port filter into the table.
- Default values for "allow" criteria will allow all traffic to pass (as shown in this example).
- Default values for "block" criteria will block all traffic.
- Enter the IP Protocol that the security interface will allow.
- Filter criteria for source and destination IP addresses and subnet masks define the values that will be allowed by the "allow" filter, and define the values that will be blocked by the "block" filter.
- Filter criteria for source and destination IP address and subnet mask do not override IP protocol criteria, but add additional criteria for the port filter.
- Click on the **Apply** button to return to the list of defined port filters.
- To delete a port filter, click on the **Delete** button of the corresponding row of the port filters table.

Host Validators

- To set the host validators, click on the **Host Validators** link in the Current Security Policies table. On the next screen, choose the **Add Host Validator** link .

You will then see the following screen:



- Enter the IP Address and subnet mask for the host that you want to have validated.
- Indicate whether the host address should be validated for incoming traffic, outgoing traffic, or both by selecting a value from the **Direction** drop-down box.
- Packets from the host address that you enter in the host validator will be blocked or allowed according to the way the validator was defined when the interface was created.
- Click on the **Apply** button to return to the list of defined host validators.
- To delete a host validator, click on the **Delete** button of the corresponding row of the host validators table.

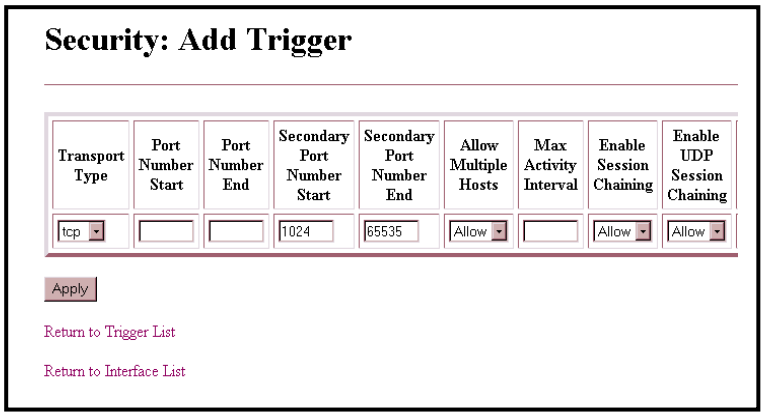
3.4.4.2 Security Triggers

Security triggers can be defined on the following interfaces:

External and internal
External and DMZ
DMZ and internal

- To add a new security trigger, choose the **Security Trigger Configuration** link, and then choose the **New Trigger** link on the next screen.

You will then see the following screen:



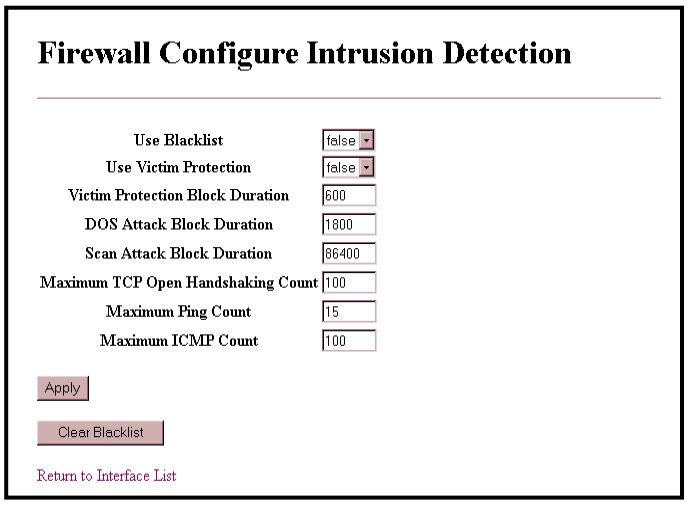
- Enter values into the table to define the new security trigger.
- The security trigger adds traffic flow constraints to the security policies.
- The security trigger remains active even when the firewall is disabled.
- Click on the **Apply** button to return to the list of defined security triggers.
- To delete a security trigger, click on the **Delete** button of the corresponding row of the security triggers table.

3.4.4.3 Intrusion Detection

Intrusion detection can be defined on any interface with an external endpoint.

- To configure firewall intrusion detection, choose the **Configure Intrusion Detection** link.
- Firewall intrusion detection can be configured only if **Intrusion Detection** is enabled in the **Security State** section.

You will then see the following screen:

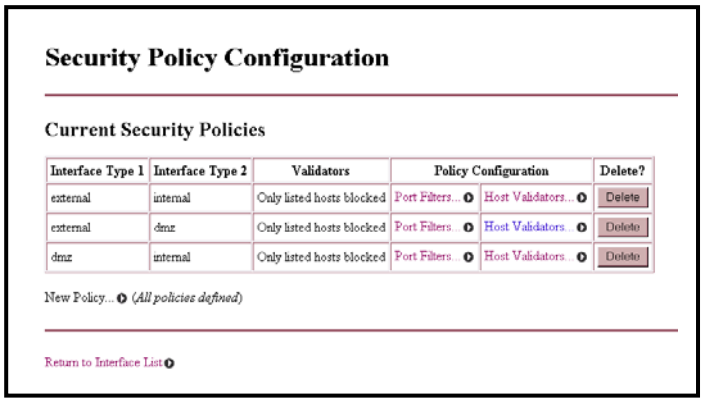


- Enter values into the table to set conditions for intrusion detection.
- If **Use Blacklist** is set to **true,** clicking on the **Clear Blacklist** button will clear the blacklist.
- Click on the **Apply** button to save the settings.

3.4.4.4 Default Security Policies

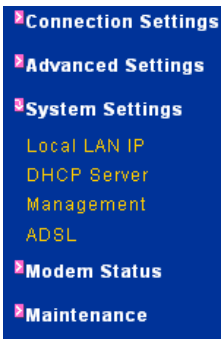
Default security policies, including port filters and security triggers, are defined for the **low, medium,** and **high** security levels.

For example, if the **High** security level is selected, security policies for every type of interface are already defined, as shown below. Each security policy applies only if its corresponding interface is defined by the user.



- The pre-defined security settings for any security level include port filter settings and security trigger settings.
- To override the pre-defined settings, you can delete the policies, port filters, or security triggers as required.
- User-defined host validators for pre-defined security policies will act to block traffic by default.

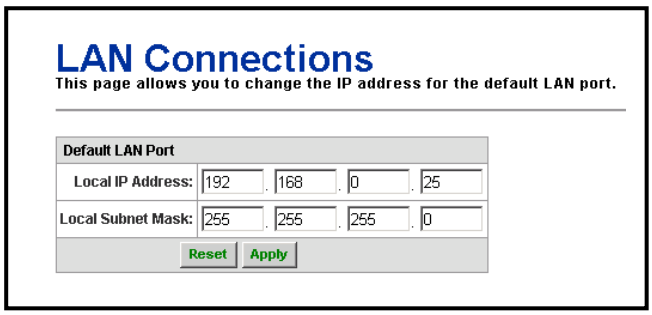
4. System Settings



- Click on the **System Settings** link on the navigation bar.
- This section includes **Local LAN IP**, **DHCP Server**, **Management**, and **ADSL**. Each section is described in detail below.

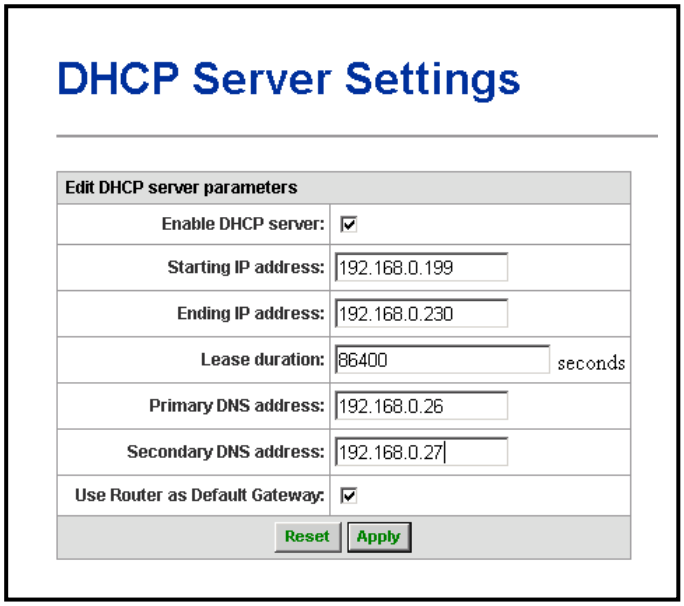
4.1 Local LAN IP

- Click on the **Local LAN IP** link in the navigation bar to view the LAN IP table.
- Define the primary IP address and subnet mask of your device here, and make changes by editing the IP address in the text box.
- Click on the **Apply** button to save the configurations.


LAN Connections
This page allows you to change the IP address for the default LAN port.
Default LAN Port
Local IP Address: 192 . 168 . 0 . 25
Local Subnet Mask: 255 . 255 . 255 . 0
Reset
Apply

4.2 DHCP Server

- Click on the **DHCP Server** link in the navigation bar to view the DHCP Server settings.
- This device can be set up to perform the service of a DHCP Server and enables data connection between multiple PCs through the configuration of IP address ranges and lease times.



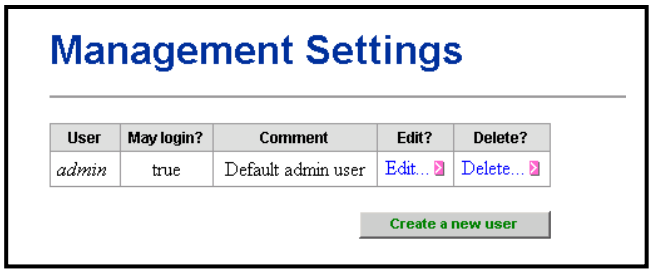
- **Enable DHCP server:** Make sure that you check this box if you would like this device to function as a DHCP server.
- **Starting IP address:** Enter the IP address that you would like the DHCP server to start assigning addresses from.
- **Ending IP address:** Enter the last IP address that you would like the DHCP server to assign.
- **Lease duration:** Enter the amount of time that an IP address can be used by a client.
- **Primary DNS address:** Enter the Primary DNS IP address.
- **Secondary DNS address:** Enter the Secondary DNS IP address.
- **Use Router as Default Gateway:** Make sure that you check this box if you would like this device to be the default gateway.
- Click on the **Apply** button when completed.

4.3 Management

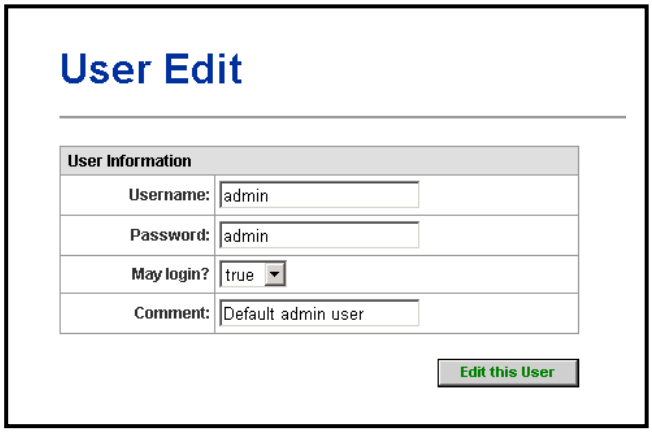
Click on the **Management** link in the navigation bar to view the user login details. Here you may edit user login details or add/delete users. Each item is described below.

4.3.1 Edit User Details

- Click on the **Edit** link to change the settings of the **admin** user.



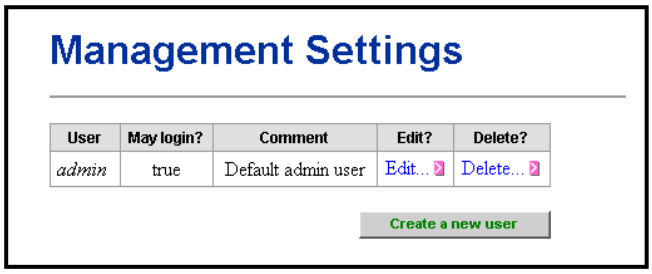
- On this page you may change the settings of the **admin** user.



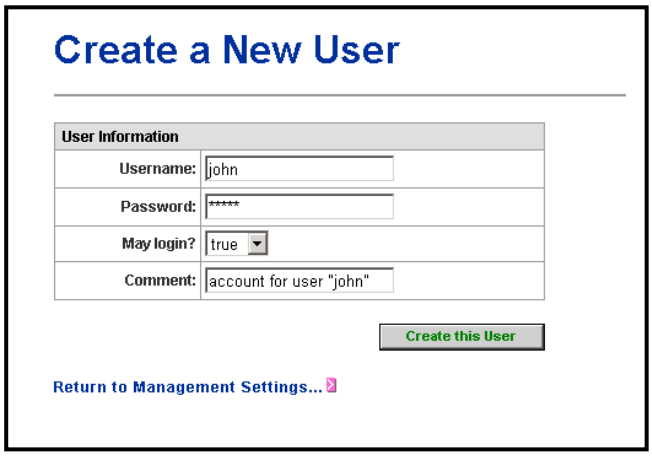
- **Username:** Enter a new username if you would like to change this one.
- **Password:** Enter a new password if you would like to change this one *(highly recommended for security purposes).*
- **May Login?: Do not change this setting to *false*, otherwise you will not be able to log into the device.**
- **Comment:** You may add a comment/description here.
- Click on the **Edit this User** button to complete this configuration.

4.3.2 Add Users

- Click on the **Create new user** link to add a user.



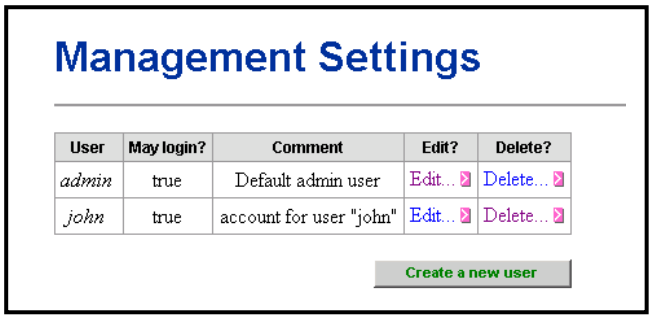
- On this page you may fill in the details for the new user.



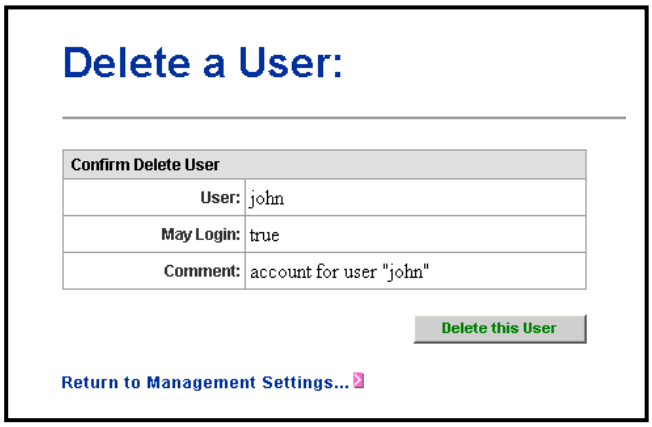
- **Username:** Enter a new username for the new user.
- **Password:** Enter a password for the new user.
- **May Login?: Do not change this setting to *false*, otherwise you will not be able to log into the device.**
- **Comment:** You may add a comment/description here.
- Click on the **Create this User** button to complete this configuration. You will then see the new user added to the table.

4.3.3 Delete Users

- In order to delete an existing user, click on the **Delete** link next to the user's name.

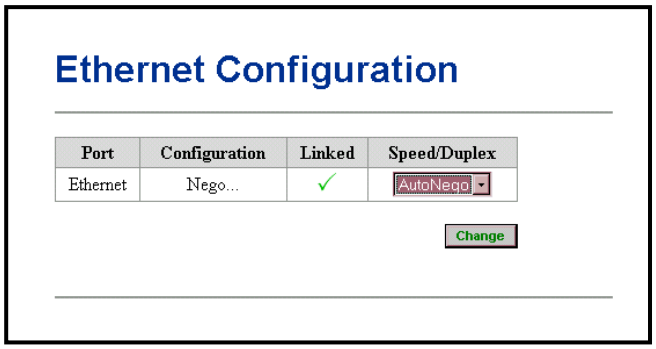


- You will then be asked to confirm if you would like to delete this user. Click on the **Delete this User** button.



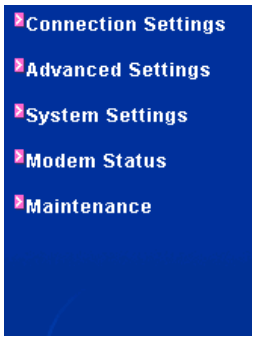
4.4 Ethernet

- Click on the **Ethernet** link on the navigation bar. This page displays a table of the default Ethernet settings. This includes port, configuration, linked status, and speed/duplex.

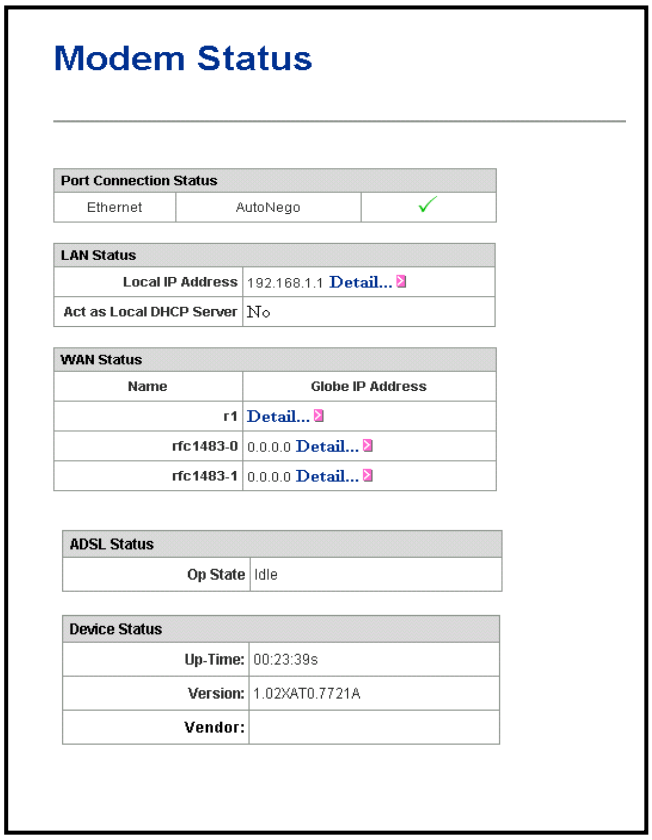


- You can choose a value for speed/duplex from the drop-down menu.
- Click on the **Change** button to save the changes.

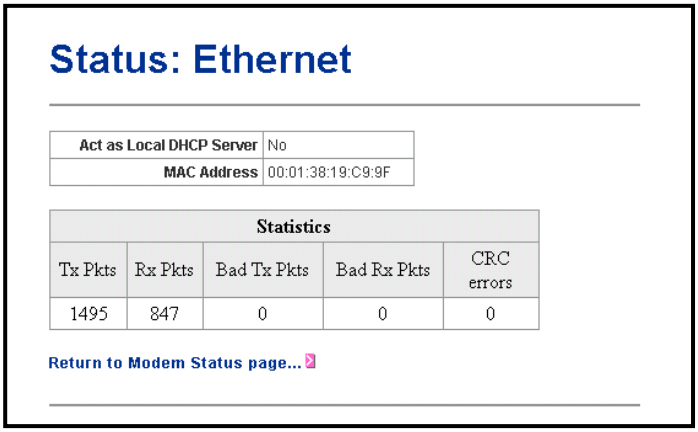
5. Modem Status



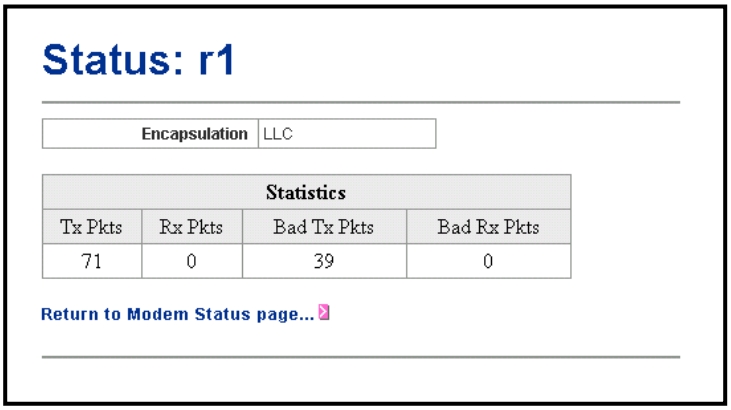
- Click on the **Modem Status** link on the navigation bar. You will then see the following page.
- Listed on this page are the port connection status, LAN status, WAN status, ADSL status, and device status.



- **LAN Status:** This table displays the LAN IP address, and indicates whether this device is used as a DHCP server. Click on the **Detail…** link to view the LAN statistics. This page displays the MAC address and transfer statistics.



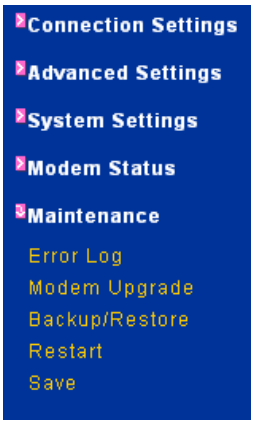
- **WAN Status:** This table displays the WAN IP address. Click on the **Detail…** link to view the WAN statistics.



ADSL Status: This table displays the operation status and firmware version.

Device Status: This table displays the device uptime and software version.

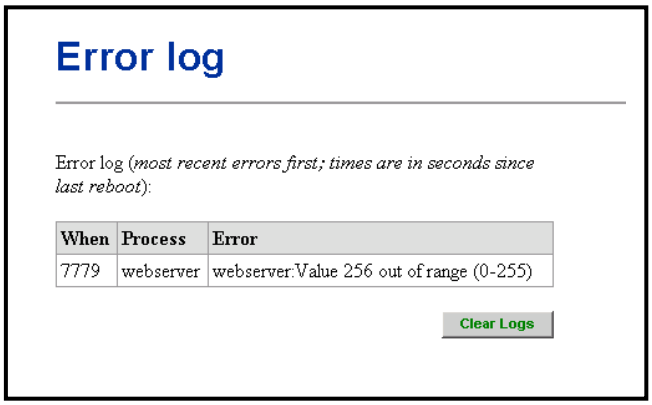
6. Maintenance



- Click on the **Maintenance** link on the navigation bar.
- This section includes Error Log, Modem Upgrade, Backup/Restore, Restart and Save. Each section is described in detail below.

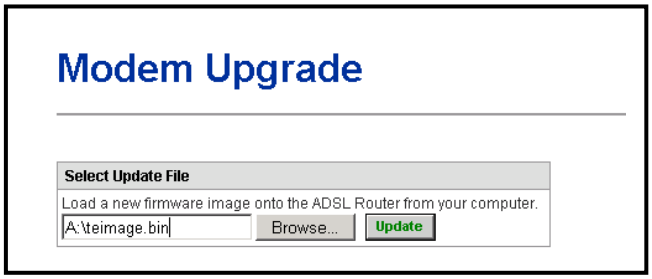
6.1 Error Log

- Click on the **Error Log** link in the navigation bar to view the history of errors.
- Click on the **Clear Logs** button to clear the log table.



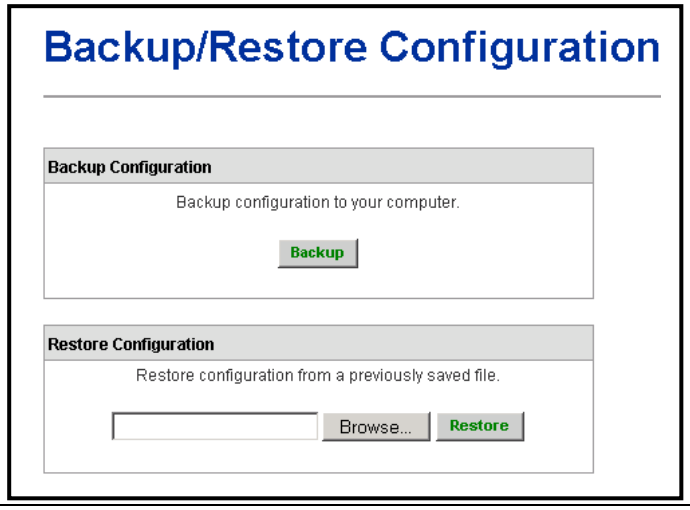
6.2 Modem Upgrade

- Click on the **Modem Upgrade** link in the navigation bar to view the modem upgrade page.
- Click on the **Browse** button to select the upgrade file.
- Click on the **Update** button when completed.



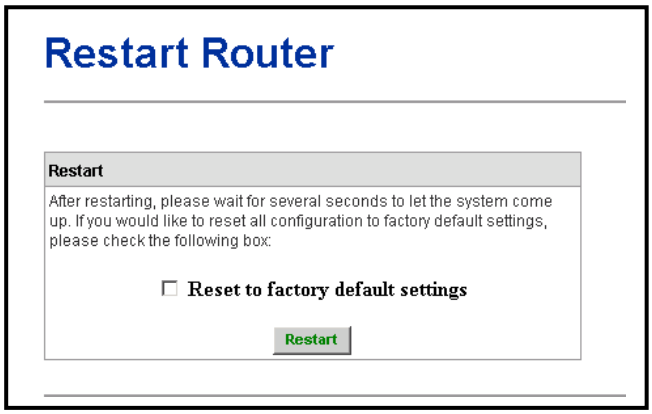
6.3 Backup/Restore

- Click on the **Backup/Restore** link in the navigation bar to view the backup/restore configuration page.
- To **back up** a configuration file, click on the **Backup** button, and then select a location where you would like to save the file.
- To **restore** a configuration file, click on the **Browse** button to select the backup file, and then click on the **Restore** button to restore the configuration.



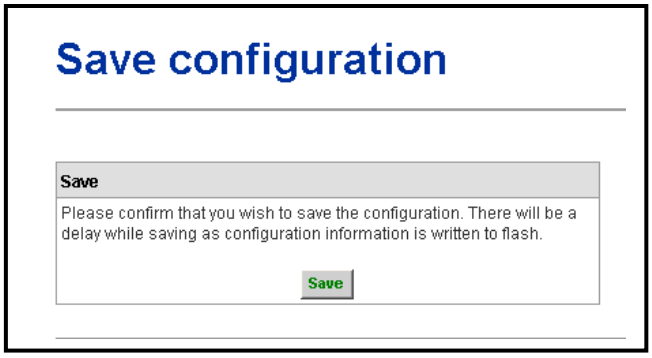
6.4 Restart

- Click on the **Restart** link in the navigation bar to view the restart page.
- To restart the modem, click on the **Restart** button. You may also check the **Reset to factory default settings** box if you would like to restart the modem with the factory settings.


Restart Router
Restart
After restarting, please wait for several seconds to let the system come up. If you would like to reset all configuration to factory default settings, please check the following box:
Reset to factory default settings
Restart

6.5 Save

- Click on the **Save** link in the navigation bar to view the save confirmation page.
- If you would like to save the current configuration, click on the **Save** button.


Save configuration
Save
Please confirm that you wish to save the configuration. There will be a delay while saving as configuration information is written to flash.
Save

Appendix A – Specifications

A1. Hardware Specifications

- Local Interface
  - Type – 10/100BaseTX Ethernet, IEEE 802.3
  - Connector – RJ-45
- WAN ADSL Line Interface
  - Compliant with ADSL ITU G.992.1, G.992.2, G.992.3 and ANSI T1. 413 Issue 2
  - Line Impedance: 100 Ω
  - Connection Loops: One (pair wire)
  - Connector: RJ-11
- Indicators
  - PWR – Green LED indicates power and operation
  - ACT – Green LED indicates LAN data Transmitting / Receiving
  - LINK – Green LED indicates LAN data link status
  - WAN – Green LED indicates ADSL data link
  - ALM – Red LED indicates data error or operation fault
- OAM&P
  - Local: RS-232, Telnet or Web management via Ethernet
  - Remote: Telnet or Web Management
- Environment
  - Operation Temperature: 0°C ~ 45°C
  - Operation Humidity: 5% ~ 95%
  - Storage Temperature: -20 ~ +85°C
  - Storage Humidity: 5%~95%
- Power
  - AC Adapter: Input 110/220VAC, 50/60Hz; Output 15VAC 1A
  - Power Consumption: Less than 9 Watts
- Certificates
  - CE, CB

A2. Software Specifications

- ATM
  - ATM Cells over ADSL, AAL5
  - Bridge mode: Supports 8 PVCs
  - Router mode: Supports 5 PVCs
  - Supports UBR, CBR, VBR-nrt, and VBR-rt
  - ATM Forum UNI 3.0, UNI 3.1, UNI 4.0
  - ILMI 4.0
  - PPP over ATM PVC (RFC 2364)
- Bridging
  - Transparent Bridging (IEEE 802.1D)
  - RFC2684 (RFC 1483) Bridged
  - Spanning Tree Protocol (IEEE 802.1D)
  - IP and PPPoE packet filtering
  - IP Multicast IGMP Proxy
- Routing
  - IP routing, RIP1, RIP2, OSPF and static routing
  - PPPoE, and IP, PPP over ATM
  - PAP and CHAP
  - RFC2684 (RFC1483) Routed
  - NAT/PAT with extensive ALG support
  - DNS relay
  - Multihoming (IP Aliasing)
- Configuration and Network Management Features
  - DHCP client and server for IP management
  - Telnet for local or remote management
  - TFTP, HTTP for firmware upgrade and configuration
  - Web-based configuration and management configuration
  - SNMP v1, v2, and v3 agent
  - SNMP MIB II
  - DSL MIB
  - ATM MIB

Appendix B – Warranties

B1. Product Warranty

XAVi Technologies warrants that the ADSL unit will be free from defects in material and workmanship for a period of twelve (12) months from the date of shipment.

XAVi Technologies shall incur no liability under this warranty if

- The allegedly defective goods are not returned prepaid to XAVi Technologies within thirty (30) days of the discovery of the alleged defect and in accordance with XAVi Technologies' repair procedures; or
- XAVi Technologies' tests disclose that the alleged defect is not due to defects in material or workmanship.

XAVi Technologies' liability shall be limited to either repair or replacement of the defective goods, at XAVi Technologies' option.

XAVi Technologies MARKS NO EXPRESS OR IMPLIED WARRANTIES REGARDING THE QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE BEYOND THOSE THAT APPEAR IN THE APPLICABLE USER'S DOCUMETATION. XAVi SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGE, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO BUSINESS OR BUSINESS RELATIONS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES.

B2. Warranty Repair

1. During the first three (3) months of ownership, XAVi Technologies will repair or replace a defective product covered under warranty within twenty-four (24) hours of receipt of the product. During the fourth (4th) through twelfth (12th) months of ownership, XAVi Technologies will repair or replace a defective product covered under warranty within ten (10) days of receipt of the product. The warranty period for the replaced products shall be ninety (90) days or the remainder of the warranty period of the original unit, whichever is greater. XAVi Technologies will ship surface freight. Expedited freight is at customer's expense.
2. The customer must return the defective product to XAVi Technologies within fourteen (14) days after the request for replacement. If the defective product is not returned within this time period, XAVi Technologies will bill the customer for the product at list price.

B3. Out-of-Warranty Repair

XAVi Technologies will either repair or, at its option, replace a defective product not covered under warranty within ten (10) working days of its receipt. Repair charges are available from the Repair Facility upon request. The warranty on a serviced product is thirty (30) days measured from date of service. Out-of-warranty repair charges are based upon the prices in effect at the time of return.

Appendix C – Regulations

C1. FCC Part 15 Notice

Warning: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 to the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, used, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is unlikely to cause harmful interference. But if it does, the user will be required to correct the interference at his or her own expense. The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless XAVi expressly approves the changes or modifications.

C2. IC CS-03 Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements as prescribed in appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, users should make sure that it is permissible to be connected to the facilities of the local telecommunications company. An acceptable method of connection must be used to install the equipment. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Warning: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority or an electrician as appropriate.

C3. UL Safety Regulations

- Disconnect TNV circuit connector or before removing cover or equivalent.
- Disconnect TNV circuit connector(s) before disconnecting power.
- Do not use this product near water for example, near a bathtub, washbowl, and kitchen sink or laundry tub, in a wet basement, or near a swimming pool.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightening.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- Use only the power cord batteries indicated in this manual. Do not dispose of batteries in a fire, as they may explode. Check with local codes for possible special disposal instructions.

No. 26 AWG Telephone Line Cord shall either be provided with the equipment or shall be described in the safety instruction. If fuse (F1) is not present, see the caution statement listed below:

CAUTION: To reduce the risk of fire, use only No. 26 AWG or larger UL Listed or CSA Certified Telecommunication Line Cord.

Contact Information

You can help us serve you better by sending us your comments and feedback. Listed below are the addresses, telephone and fax numbers of our offices. You can also visit us on the World Wide Web at www.xavi.com.tw for more information. We look forward to hearing from you!

World Headquarter
XAVi Technologies Corporation
9F, No. 129 Hsing Te Road, Sanchung City
Taipei Hsien 241, Taiwan,
Tel: +886-2-2995-7953 Fax: +886-2-2995-7954

USA Branch Office
1463 Madera Road, N. Suite 182 Simi Valley
CA 93065, USA
Tel: +805-578-9774

European Branch Office
Papenreye 27, 22453 Hamburg
Germany
Tel: +49-40-589510-0 Fax: +49-40-589510-29

China Agency
Room 401, Floor 4, #608 ZhaoJiaBang Road
Shanghai, 20031
Tel: +86-21-6431-8800 Fax: +86-21-6431-7885